ED 243 456 DESCRIPTION AND EVALUATION OF TRIALS OF TELIDON EQUIPMENT AND DATA BASES IN TWO YRBE SECONDARY SCHOOLS IN 1983.

1 OF 1 BURNHAM, BRIAN YORK REGION BOARD OF EDUCATION, AURORA (ONTARIO).

FEB 84 37P.

DOCUMENT RESUME

ED 243 456 IR 011 070

AUTHOR Burnham, Brian
TITLE Description and Evaluation of Trials of TELIDON Equipment and Data Bases in Two YRBE Secondary Schools in 1983.
INSTITUTION York Region Board of Education, Aurora (Ontario).
PUB DATE Feb 84
NOTE 37p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Computer Oriented Programs; Costs; *Databases; *Display Systems; Feasibility Studies; Foreign Countries; *Online Systems; Pilot Projects; Secondary Education; *Units of Study; *Videotex
IDENTIFIERS Ontario; Student Guidance Information System; *Telidon System

ABSTRACT

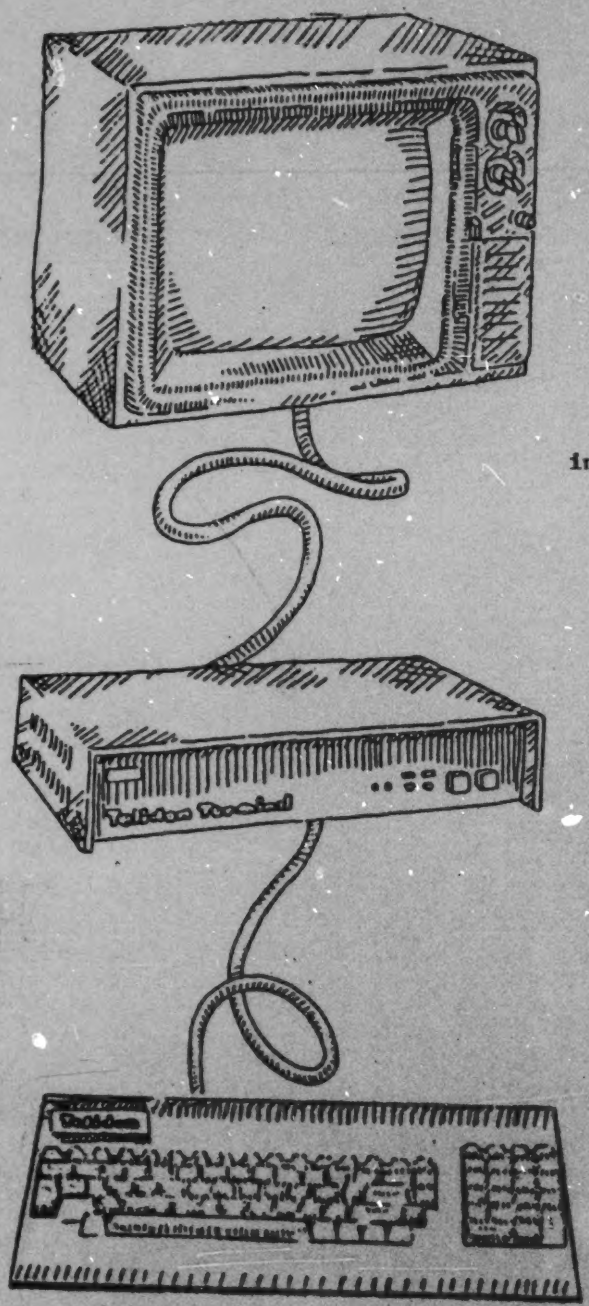
Telidon, which consists of two computerized communications systems for displaying text and graphics on a television screen under user control, is being field tested in the libraries of two York Region Board of Education (YRBE) schools in Aurora, Ontario. Beginning in spring 1983, students were able to access, via telephone, a computerized data bank which held several databases. The principal database is the Student Guidance Information System (SGIS), which contains career and higher education information. Other databases provide job hunting information, describe the Telidon system, and offer learning units on varied topics, including astronomy, Blissymbolics, microcomputers, energy, and sociology. Preliminary results indicate that the scope and variety of the databases are narrow and that only SGIS was extensively used. Text is overused, the graphics capabilities are not employed, and movement from page to page is slow. Continuing technical problems were evident. While the trial sponsors are providing initial financial support, post-trial costs may be prohibitive. It is recommended that a plan for better use of the SGIS database be developed to ensure appropriate follow-up. One YRBE school opted to discontinue Telidon use after the trial period. Appendices include trial costs and per-use costs and specific study data. (LMM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED243456

IR011070

IR



Description and Evaluation of Trials of TELIDON Equipment and Data Bases in two YRBE Secondary Schools in 1983

THE YORK REGION BOARD OF EDUCATION

Research Office

Division of Planning and Development

February 1984

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

+ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Brian Burnham

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Description and

Evaluation of Trials of

TELIDON

Equipment and Data Bases

in two YRBE Secondary Schools

in 1983

by Brian Burnham
Chief Research Officer
Division of Planning and Development
The York Region Board of Education

February 1984

IR011070

Description and Evaluation of Trials of
Telidon Equipment and Data Bases in
two YRBE secondary schools in 1983

ABSTRACT

Telidon, which consists of two computerized communications systems for displaying text and graphics on a television screen under user control, is being given field trials in the libraries of two YRBE secondary schools.

Beginning in the Spring of 1983, students were able to access, via telephone line, a computerized data bank which held several data bases. The principal data base is the Student Guidance Information System (SGIS) which contains career and higher education information useful to Intermediate and Senior Division students. A "You and Employment" data base offers job hunting information. Other data bases describe the Telidon system and offer "Sample Learning Materials" consisting of 33 units on a variety of topics as different as astronomy, Blissymbolics, microcomputers, energy, and sociology.

This report describes briefly the Telidon system and its earlier trials in the YRBE. The 1983 trials are described and evaluated in greater detail. Cost data are provided and analyses of usage data are appended.

The most significant findings can be summarized as follows.

(1) The scope and variety of the data bases are narrow and only SGIS was extensively used. Text is overused and the graphics capabilities are not exploited. Movement from "page" to "page" is slow (unacceptably slow in the broadcast mode).

(2) There were continuing technical problems, and not all were corrected by the time of this evaluation report.

(3) While the trial sponsors are paying the bulk of the operating costs, after the trial ends (March '84), these costs will possibly price the system out of the schools' reach.

(4) A plan for better use of the SGIS data base needs to be developed to ensure appropriate follow-up.

One YRBE school has already opted not to continue use of Telidon past March.

ACKNOWLEDGEMENTS

The field trials of the Telidon technology described in this report would not have been possible without the extra efforts made by many YRBE and other professional and technical staff. It is appropriate that their dedication be acknowledged at the outset.

Mr. John Syrett, TVOntario's Telidon Project Director shared with us the frustrations of delays and technical problems. John was always available to give information, suggest possible actions, or to make contacts with TVO's technical or other support staff.

Mr. Chuck Searle, the YRBE Coordinator of Guidance and Bill Sanders, Assistant Coordinator offered good ideas and advice. Chuck's liaison with guidance staff was as valuable as it was necessary.

Mr. Lee Gould, attached to the YRBE Research Office to help out in several projects, spent days tabulating and analysing user data then preparing graphic representations of findings. When it was decided to extend the data-collection period, he re-worked all the information, re-analysed and re-plotted the findings without complaint and with very good effect, as Appendix "B" shows.

But the greater sacrifice of time and the greatest demands "to go the second mile" fell to the librarians in the two secondary schools. While their principals and guidance colleagues also were called upon, it was to Bayview's Mrs. Wendy Osborne and Stouffville's Miss Audrey Fullerton that the heaviest workload fell. Their extra efforts are too numerous to list, but this report conveys a sense of the many tasks that had to be done and some of the problems that had to be borne.

CONTENTS

Page

1. Overview 1

2. Introduction

(a) What is Telidon? 1
(b) Telidon and Education 2
(c) Educational Trial of Telidon in the York Region, 1980 3
(d) Prelude to Current In-school Trials of Telidon 3

3. The YRBE Trials, 1983

(a) Pre-installation period, 1981-1982 4
(b) Trials, Spring and Autumn 1983 6
Edutel 7
Edutex 8
(i) Evaluation concerns 9
(ii) Evaluation findings
- Technical dimensions 9
- Content dimensions 10
(iii) Evaluation conclusions 12

Appendix "A": Trial costs and per-user costs 13

Appendix "B": Bayview S.S. Student User Data 17

TABLES AND FIGURES

Page

Table 1: Summary of trial costs to December 31, 1983 14

Figure 1: Overloads of data bases by hour 18

Figure 2: Use of data bases by grade 19

Figure 3: Use of data bases as percentages of total use 20

Figure 4: Use of data base by sex 22

Figure 5: Use of data bases by sex, expressed as percentages ... 23

Figure 6: Data bases, use by week 24

Figure 7: Use, by grade 25

Figure 8: Use of data base "Telidon" 27

Figure 9: Use of the "Subjects" data base 28

Figure 10: Use of SGIS data base, by grades 29

Description and Evaluation of Trials of
Telidon Equipment and Data Bases in
two YRBE secondary schools in 1983

---

by Brian Burnham, Chief Research Officer

1. Overview

Bayview Secondary School (Richmond Hill) and Stouffville District Secondary School (Stouffville) tried out the Telidon teletext and videotex systems in the spring and autumn of 1983 (to December 16). These trials were largely funded by the federal government and by the Ontario government which, through its agent, TVOntario, required an evaluation from participants. Certain capital and operating costs were borne by the York Region Board of Education. This report includes cost data.

The two schools conducted the trials in their library resource centres under the supervision of the teacher-librarians. The YRBE Chief Research Officer designed an evaluation model with the assistance of the two schools' librarians who collected and reported much basic data and also made many of the direct contacts with TVOntario staff about technical matters.

This report describes the nature of the Telidon systems and provides a historical context for the present YRBE trials. There is a summary description of the Board's evaluative criteria and how the Telidon systems measured up.

Bayview decided not to continue with the systems past the trial period. As an extended appendix to this report, Bayview's user data are examined in detail so that the critical weaknesses in the systems, as that school experienced them, can be appreciated.

2. Introduction

(a) What is Telidon?

Telidon is a proprietorial name of a technology combining two computerized systems for displaying text and graphics on a television screen. Print or pictorial images are retrieved by viewer command from databases where (the Telidon contraction) encoded information is stored.

Telidon is a communications system rather than just an information medium to the extent that the viewer can signal to the data base what subject matter is to be displayed. The interactions are under computer control. Data are moved as digital signals requiring a decoder at the user end.

Some decoder units have a memory reserve which permits "capture" of broadcast ("teletext") data and to display the text or graphics long after the broadcast signal has been transmitted, even after the original source has been disconnected. Microwave or satellite transmission of signals are possible for teletext transmissions, but not used in the present trials.

"Videotex", the other system of Telidon communication, is a "dial up" or "on-line" mode. Communication is effected via telephone land line or other wired or optical fibre two-way connection. The videotex (on-line) system permits access to the whole data base and permits significant interaction. The teletext (broadcast) mode only picks out what is or has been "on the airwaves". The Telidon unit in this 1983 trial normally functions in both modes and both modes can display both text and graphics.

Telidon was developed by the Federal Department of Communications and boasts of superior colour graphics compared to similar systems operating in other countries.

By 1983 TVOntario had begun to call its on-line videotex system "Edutex" and its broadcast teletext system (operational in late summer 1983) is called "Edutel".

(b) Telidon and Education

The publicly owned Ontario Educational Communications Authority and TVOntario (OECA's educational broadcast network) consider Telidon a potentially valuable educational medium because Telidon's interactive ability (videotex mode) permits students to pace themselves through the displayed material, to "go back a page" or to interact in other fashions appropriate both to what is being learned and to the student's rate of learning. As the graphics also help to focus the learner's attention and because lessons, quizzes and tests can be programmed for computer-assisted learning over long distances, Telidon is seen as a promising pedagogic tool. In the teletext mode, "Edutel", the content is designed to be of a "bulletin board" or "broadcast magazine" nature and more generally cultural than pedagogic.

(c) Educational Trial of Telidon in the York Region, 1980

In 1980 the federal Department of Communications, TVOntario, and several Ontario educational institutions joined in a trial of Telidon in the videotex mode. Some 55 units were involved in these field trials. Costs were borne by senior government.

After many delays, Telidon units were installed in Markham District High School and in the YRBE Administrative Centre in April 1980. There were various equipment malfunctions and technical problems encountered in on-line accessing of the data bases (the broadcast mode was not then developed for trial).

The substantive content was somewhat limited, of the "for-demonstration-only" nature. Viewers did not find this very engaging after the novelty effect wore off, but the on-line system clearly had potential. Some Markham teachers were keen to create instructional sequences and were very impressed by the ease by which Telidon "computer graphics" could be generated compared with graphics created by general purpose microcomputers. Lack of ready access to graphics generators inhibited acceptance of TVOntario's invitation to create "pages" for their system.

These trials in the YRBE sites ended, as scheduled, in June 1980 after only three months and many frustrations. Many attempts to demonstrate the equipment ran into problems. Gremlins seemed to haunt the lines every time it rained between the host computer in Ottawa and the York Region, and it was a very wet spring.

(d) Prelude to Current In-school Trials of Telidon

In January 1981 TVOntario circularized school boards and other educational/cultural institutions to recruit participants for further Telidon trials. This project, financed in large part by the federal Industry Investment Stimulation Program (IISP) and the Ontario Board of Industrial Leadership and Development (BILD) program, was announced as "an exploration of the benefits deriving from year-long access to an educational Telidon database".

This present evaluation report, called for by the contract which the YRBE eventually entered into with TVOntario (the sponsors' agent), is principally but not solely concerned to address the matter of "benefits deriving", as will be seen especially in the Bayview user data analyses.

To encourage enrolment of 100 participantites in these trials, the sponsors agreed to put up half the cost of the Telidon terminals i.e., receiver units, each consisting of a command-generating keyboard, a display monitor, a communication modem, and a decoder. The remaining capital equipment cost was to be borne by the participating boards and would be grantable at the extraordinary expenditure rate. The cost of installing the equipment also fell to the sponsors. Ownership of the equipment became vested in the participating board as of September 1983. Operating costs were to be divided: fixed costs (e.g., monthly telephone line charge) to the sponsors; variable costs (of accessing the database by land line) to the board.

Without pressing the point, acquiring ownership of the equipment at a very modest cost could be viewed as a "benefit deriving". However, this study puts no value on this "benefit" and suggests that the equipment salvage value at project end (March 1984) depends on the demand for the programs in the databases and whether users are even prepared to pay the operating costs of the system.

Summaries of visible costs to the YRBE to December 31, 1983, appear later in this report.

The YRBE Trials, 1983

Pre-installation period, 1981-1982

The original invitation from TVOntario, January 4, 1981, asked for indications of interest in acquiring and trying out Telidon units "in 1982".

After reviewing the 1980 experience, it was decided by the YRBE Division of Planning and Development to proceed, but conservatively, to further trials. The (1980) siting of Markham D.H.S.'s Telidon unit in the school library had proved to be a good location (easy to access, easy to supervise, relevant to the resource-based learning philosophy of the school and its library). It was decided to ask secondary school librarians and their principals whether they wished to participate (the board was to bear operating costs). Seven high schools were positive about Telidon's potential and volunteered.

Consultation with TVOntario's Telidon Project Director lead to a decision to ask for four units. Seven would not likely be granted as

there were only 100 installations planned for the the whole province. It was suggested that we could expect to get two sets and, eventually, that's what arrived.

By late 1981, it was clear that the principal content of the Telidon on-line database (the only mode then operational) was to be the Student Guidance Information System (SGIS). It was decided, after consultation with the Board's Coordinator of Guidance, to try to locate the units in the libraries of two schools which offered the Career Development credit course (CDCC). In both schools a slide presentation on Telidon was arranged for the principal, guidance head, and librarian. Both schools readily decided to participate in a year's trial, expecting this to begin in 1982.

It needs to be understood why these two schools were selected and what implications the selections have for the evaluation study results and their generalizability.

Each of the two schools was already using SGIS in its traditional mode. That is, printouts ("hard copy") of career information were cranked out of the database and delivered to a student some days after a written request for the information had been forwarded from the school's guidance department. Each school also had (for part of the school year) the Reed Career Service videotapes which provided attractive graphics and sound tracks in support of occupations information in print. And each school had (just before or during the beginning of the Telidon trials) the microcomputer version of CHOICES, a system of accessing career information developed for the federal government. The CHOICES database is somewhat less complete than SGIS but has some different and attractive, compensating features.

SGIS on Telidon (in the library) would have to win its spurs, given that students seeking career information have alternatives (in the Guidance Office). In order to discover whether students would, of their own volition, use Telidon it was decided not to "promote" the service aggressively. Rather, all teachers, students and their parents were told of the system's availability and, naturally, to give all possible assistance to voluntary users. Similarly, there was no "hard sell" job on guidance or other staff, just a consistent effort to inform. After the novelty effect had palled, use of Telidon would be mainly a reflection of genuine interest and utility.

Obviously, different use patterns could be expected where there is no competing career information delivery service. Even if SGIS on

Telidon was a very poor product, use might be high if it were "the only game in town". The findings of this study may be only generalizable to schools with circumstances similar to Bayview and Stouffville i.e., where well-supported CDCC programs are already in place.

The librarians in each school selected appropriate sites for the equipment. They made commitments to assist not only in the operation of the trial but also in evaluation of the experience. They studied the proposed model and agreed to keep appropriate records. To collect data on use, a log was designed to identify which Telidon database was accessed (e.g., SGIS, subject information packages), by whom (sex and grade level), how often and how long, etc. Given the many tasks that fall to the lot of a secondary school teacher-librarian, this was no casual commitment.

Had they truly understood what efforts they would have to make and what frustrations they would on occasions have to cope with, the librarians might not have been such willing volunteers. As they had been briefed on our 1980 experience, they were not taken unawares nor did they fall into the trap of "hard selling" a technology to colleagues and students. When the anticipated problems arose, there were few, if any, violated expectations arising from rosy glow selling of an imperfect and insubstantial system. This was good strategy for avoiding backlash from oversold users. It probably also resulted in low-usage figures in the early implementation period (Spring 1983, early Autumn 1983) simply because there has been no promotional hype.

That premature "selling" might be wrought with dangers became clear through latter 1981 and throughout 1982 as time and again TVOntario pushed its equipment delivery dates ever further into the future. Little information was volunteered by the sponsors. The Chief Research Officer called the Telidon Project staff every month to ask for status information, to ask about "pre-utilization training" arrangements, etc. By the end of 1982 there was still nothing in either YRBE school. Nor, when the training session was held, was the Chief Research Officer invited to attend (the two librarians were, and so was the Guidance Coordinator). Such omens proved to be accurate indications of misadventures to come.

(b) Trials, Spring and Autumn 1983

Telidon receivers were installed in the libraries of Bayview Secondary School and Stouffville District Secondary School on March 8

and May 10, 1983, respectively. In March the librarians had been exposed to a training session ("trained" would be an overstatement of their status), and each had been given a "Telidon Utilization Manual" and some copy that could explain to an interested reader what the Edutel and Edutex systems hoped to be. Materials which would have helped the librarians help students to access more quickly and directly the details of careers were sent to the schools' guidance departments rather than to the librarians. In one school these materials were not forwarded and the librarian, unaware of their existence, did without them for some weeks until she became aware that the other librarian had these aids. The problem seems to rest in routinely sending SGIS information only to guidance departments.

Such problems might be better understood and addressed if the various participants could be occasionally called together for an information exchange. Such programs were twice proposed to TVOntario by the Chief Research Officer, but apparently to no avail.

Malfunctioning of the Stouffville installation were quickly and effectively dealt with by TVOntario technical staff (David Sutherland, Jim Roser, Alan Orr) and the equipment manufacturer, Norpak.

No "hand-holding" services or post-installation continuing support or exercises have been offered by TVOntario, no follow-up training has been held, and no "trouble-shooting" advisory communiques have come to YRBE participants. All these were needed and not just for technical briefings. Whoever supervises the Telidon receiver needs help in thinking through strategies for working with guidance counsellors and classroom teachers to ensure that the potential of the electronic databases is integrated into the counselling and subject curricula and methods.

Edutel

As noted earlier, the Edutel (broadcast) system did not become operational until school resumed in the autumn. Bayview was never able to receive (or display, perhaps) the broadcast signal. The installers, from what was then called the Canada Computer Group (Bell Canada's computer communications unit) could not get the test signal. Subsequent calls to both the administrative and technical staff of the TVOntario Telidon project produced no assistance. The Bayview librarian and A.V. technicians and the Chief Research Officer in turn were told by CCG or TVOntario "That's the way it is in some areas, the

signal can't be picked up" and "You probably need to mount an antenna over the library: your school's master antenna is too far from your unit" and "We can't come and check out whether it's a signal or receiver problem, we're too busy right now."

By December 1983 we had all but given up hope of getting diagnostic assistance for Bayview's unit from TVOntario's technical staff. By this time Bayview had decided not to continue in the trials past the agreed upon period (March 1984). A call was made to TVOntario on January 17 to inform them of this decision. Within two days, Bayview was visited by a technician who changed the power hookup, exchanged the Videotex decoder, and had Edutex in good working order. This technician indicated that someone would come soon to work on the teletext signal. A few days later two TVOntario staff arrived, worked briefly on the set and arranged to come back the next day. Two weeks later (February 7) we are still awaiting their return.

The broadcast mode, thus, has only been tried at Stouffville D.S.S. And even there scarcely tried. This is because it takes so long to bring a "page" of material to the display monitor that none but the very patient would spend so much time to get so little information. In one timed trial, for example, it took an average of 24 seconds (but as much as 50 seconds) to get a response to a viewer signal (e.g., to call up a page or to move on to the next page). To get the local weather report took over five minutes, provided the system did not "go down" or in other ways present a problem, as commonly occurred.

In short, Edutel was largely a non-event. We would be pleased to give it a further try, but not until the signal is in shape or our equipment is in shape. On a "benefit derived" scale of "1" (low) to "10" (high), we give Edutel a "0" as a non-starter.

Edutex

The remainder of this evaluation is really on the Edutex (on-line) Telidon service which was operational in both schools via telephone land line. One condition of participation was that a "dedicated access" line be installed and used exclusively for the trial. Installation and basic service charges were fully reimbursed through TVOntario as the agent for the sponsors, the Ontario BILD program and the federal IISP.

(i) Evaluation concerns

The sponsors' stated interests relate to the development and communication of job-related databases and to developmental research of the Telidon telecommunication system. A concern common to the sponsors and this school board is to determine what benefits derive to end users. The scope of the present evaluation reflects both awareness of the range of concerns and also the centrality of the "benefits" question, at least to the schools.

The study therefore included three evaluative dimensions (technical, content, and presentation format) and envisaged three general categories of evaluators (end users, librarians, researcher).

The scope of the evaluative dimensions can be summarized:

technical dimension: picture and print quality and size; access time; down time

content dimension: relevance; timeliness or currency; pedagogical soundness; substance

presentation dimension: pedagogical acceptability; pacing; balance of graphics/print; ease of access

As noted earlier, while we had the dual-mode Telidon receivers, only the Edutex service was available or possible to use significantly over the trial period to mid-December 1983. Therefore this is an evaluation of the on-line service and databases.

(ii) Evaluation findings

Technical dimensions

Picture and print quality: these were acceptable with respect to clarity, definition, legibility, and colour trueness. To viewers accustomed to North American colour television, the Telidon graphics were "acceptable" but not perceived as something very different except for the "build-up" sequencing of graphics which was seen as tedious and time-consuming. The researcher has seen European videotex/teletext systems in operation, appreciates the differences, but doubts whether the "superior graphics" capabilities touted by Telidon's

developers is of much pedagogic consequence, based on current demonstration pieces (which makes little use of graphics).

Picture size: the monitors used in this trial are significantly smaller than those provided in the earlier trials and are thus only suitable for use by a single viewer or small group. Presumably, "large group" monitors are or will be available.

Access time is faster than in earlier trials, and movement from one "page" (or build up of a page) to the next seemed faster and more reliable than in the earlier trials. First time users found access and movement times slow. The showy rebuilding of the SGIS logo with every movement to a new page is both unnecessary and frustrating for the task-oriented user who is plowing his way toward wanted data.

"Down time", the occasions when the system is totally inoperative or not accessible, or simply malfunctioning were, after the first months of the trial, less than expected based on earlier experience. As the appendix shows, the time frames when apparently the system was overloaded (too many would-be users for the number of "ports" to the computer) largely corresponded with times when this condition could be predicted (e.g., at the lunch period) for an on-line service to students. Down-line loading to local storage devices, a minicomputer for instance, could obviate this situation. However, this will not likely correct "crashes" such as that which occurs when the vital command to continue, "> RETURN", will not function (nor will any other command), as sometimes happens after the unit has been on for 10 minutes or so.

Content dimensions

Relevance: while the SGIS is, along with a job hunt unit, the principal database, there are other information packages available to users. These are "Sample Learning Materials" (commonly called "subjects" by the students) which were salvaged from earlier trials. Examples of the "subject" units are geometry, astronomy, energy, Blissymbolics, sociology, and some games. Sociology consists of page after page of print copy of what possibly is a good review of a college freshman course in deviant behaviour, shows Telidon at its worst, i.e., as an electronic textbook. Logging of usage of the various databases helps determine the relevance of the offerings as seen by students and teachers. Analyses of the Bayview logs are provided on subsequent pages, but it can be noted here that very few

teachers tried Telidon and even fewer repeated their exploration (unlike the Markham experience). The "relevance" of the Telidon system and/or the substance of the databases apparently do not sell themselves to teachers. A marketing or orientation program is necessary to create an awareness in teachers. Something must be done to build in busy teachers a curiosity and a desire for more information, and for hands-on learning experiences. Suggestions on how to integrate both the content of Telidon information banks and also the skills involved in searching for data into their curricula need to be inherent to the content. The perception of relevance is, to a degree, a function of involvement. A Telidon system without an involvement strategy is not likely to convey "relevance" to teachers who have alternative means of providing guidance or subject information already in place.

Timeliness or currency, pedagogical soundness, substance: as there was little teacher involvement, it was not possible to do the sort of "critique" that occurred in the 1980 trials. Perhaps neglect of Telidon by teachers should be viewed as a sort of negative report. But such an assumption is too open to challenge and this evaluation report chooses to leave these dimensions open to further investigation except as respects the SGIS and job hunt data. Here there is evidence, based on usage, of timeliness (to student needs) and substance (based on students' time on the terminal and their oral reports on usefulness and substance). These matters are dealt with in the appended statistical report section.

Presentation dimensions: again, lack of substantial teacher involvement is perhaps a de facto negative judgment on the pedagogical acceptability of the data banks. Certainly, the benefits of some of the "Sample Learning Materials" are elusive (how does one rate the benefits of exposing grade 9 students to units on astronomy or Blissymbolics?). The units on energy and computers were scanned or studied by some few students, as the Bayview data show (the energy material related to a grade 10 science unit, apparently). But use of the "learning materials" was so slight, either absolutely or relative to SGIS, that they clearly are not "grabbers" in their own right, and no one was "selling" these materials to the students.

(iii) Evaluation conclusions

As the adage has it, the proof of the pudding is in the eating. Without force-feeding, students may be slow to sample a new product, especially when they are not discontent with existing offerings.

While students today are screen-oriented, the Telidon screen seems to have none of the captivating power of its rivals -- commercial television or the arcade/video game or the microcomputer monitor.

As Bayview's data suggest, when Telidon is "down" for any significant period, use is slow to recover to previous levels. More consistent performance may help maintain "customers". But to bring more into the shop, better offerings are needed in the showcase.

APPENDIX "A": Trial costs and per-use costs

As Table 1 (p. 14) shows, the gross visible costs to December 31, 1983 (January 31 in the case of the basic service charge) total $6,603.60.

TVOntario, on behalf of the sponsors, remitted $2,858.42 toward the installation charges and the monthly basic service charge. But since rates rose twice since the installation, an adjustment payment of about $140.00 is hoped for in this next installment of sponsors' funds.

The YRBE's costs total not more than $3,745.18 and are mainly to acquire the Telidon units (at $3,312). This latter expenditure is grantable at the extraordinary rate.

To estimate a per-use cost, based solely on the fixed service and variable user costs (i.e., excluding the capital expenditure), Bayview's usage log has been analysed (Stouffville's costs are lower but so is use). In the four-month cycle September 21 to December 16 (actually only 87 calendar or 61 school days) there were 331 attempts by Bayview students to use the unit of which all but 26 were "successful". A "successful" use meant that the system was not down and the user reached the data bank. (Note, if two students were using the system at one time, each was counted as having an attempt.) Bayview's Telidon operation costs for the four calendar months totalled $654.64, including the basic service charges that accounted for over 70% of operating costs.

During this period there were some inhibitions upon use. For example, during the school week November 7-11, the system was down one morning, and due to the librarian's absence, not available for three subsequent days. Only two student uses occurred all week. The school also experienced (as do many schools, one expects) a pre-Christmas let-down in academic activity. This is our interpretation of the fact that in the five school days preceeding Christmas Break there were only four uses involving a total of five students.

Duration of use varied widely, from as little as 10 minutes to as much as an hour or more. For instance, three grade 13 students working together, used SGIS for 75 minutes. Extended duration use of SGIS by grade 12 and 13 students grew from latter October through to early December, perhaps because these students would hope to graduate either at the end of the semester (January) or in June and were involved in

TABLE 1: Summary of trial costs to Dec. 31, 1983[1]

School	Installation charge	Monthly service charges[2]	User charge[2] (packet & network)	Telidon unit purchase[2]	TOTALS
1. Bayview S.S.	$ 100.00	$1,600.45	$ 182.28	$1,656.00	$3,538.73
2. Stouffville D.S.S.	100.00	1,214.00	95.87	1,656.00	3,065.87
	$ 200.00	$2,814.45	$ 278.15	$3,312.00	$6,603.60

GROSS Expenditure = $6,603.60

Rebate from TVO = $2,858.42

NET COST to YRBE = $3,745.18

1 The basic service (a dedicated telephone line) charge is billed a month in advance. Thus about $285 is a prepaid expense.

2 Includes tax.

post-secondary career or education planning. However, user charges are not great, averaging 55¢ per attempt.

Per-use cost (or attempted use, which also entails costs), including the fixed and variable operating charges, averaged almost $2.00 (331 uses at $654.64 = $1.98). If the system were to become technically problem-free, were to possess more access ports, were to contain better data bases, were to be directly usable by students (obviating the intervention of the librarian), and were to be aggresively marketed, then use would likely increase considerably. And there certainly was unused access time, even on the busiest days (typically, six uses involving eight students for 225 minutes).

As it is, a typical "successful" user incurred $2.00 or so of operating costs for about 25 minutes of "service". It would be hard to find any human information service agent who would work for $4.75 an hour.

Cost-per-use could probably be substantially reduced without any basic changes in the present configuration, merely by getting the bugs out, speeding up movement through the "pages", and, by promotion, increase usage.

Beyond that, if real reductions are to be realized, the charges levied by Bell Canada must be dramatically reduced or almost totally eliminated by use of the broadcast mode plus down-line loading or other technological breakthrough. Since the latter solutions are not imminent, how can Bell line costs be significantly controlled or reduced? With rate increases totalling 11% between March and December 1983, one might wish to see rates rolled back. The easier remedy is to oblige the company to reverse its unilateral decision to eliminate the seasonal disconnection of service and permit schools to suspend service for two or three months each summer.

Frankly, student use of Telidon in secondary schools in the three months from June 7 to September 6 would normally be very, very limited, probably non-existent, as students have finished regular classes by about June 7 and do not return to school much before September 6. Such use would not warrant paying even a fraction of the present basic service charge for these three billing periods (Bell bills from the seventh of the month), which would total $857.40 for the two schools in the summer of 1984. Even if Bell were to charge $100 to disconnect and reconnect the service, a school would still save $325.70 at present rates ($142.90 per month, including tax).

While concern is to get educational value for money, this does not necessarily mean we should always look to spend less. There is one secenario that justifies additional expenditures on Telidon (perhaps with offsetting savings elsewhere).

Presently, the conventional "off-line" SGIS service is totally subsidized by the Ministry of Education. But this situation is expected to end in the near future and user charges will be incurred. Since users of SGIS often need or want "hard copy" (printouts) of career or higher education information, that service will probably be supplied and paid for somehow or other.

There are several ways to get hard copy from the computer beside the present off-line method. One would involve generating microforms of the SGIS data base and placing them in every user school. At these schools microform reader-printers would be installed. An alternative is to provide printers coupled to the Telidon receiver so that, on user command, hard copy of only the needed text or graphic could be generated. Text printers are available for the European teletex systems and no doubt could be for the Telidon system, at what cost the present writer cannot say. Nor can he say that it would be less expensive than the off-line (possibly it wouldn't be). But it should be a far faster service, more versatile (if it can also capture non-SGIS data, including their graphics). And it could be cheaper if the user calls for printouts only of data which he has already perused and determined to be of interest and value to his decision-making. The off-line method is essentially a "blind call" and the likely value of the hard copy can only be guessed at until it is in hand, unlike the Telidon alternative.

APPENDIX "B": Bayview S.S. Student User Data

General

Analyses of use of system data were made for the period September 21 - December 16. During these 13 weeks there were several days when the system was unavailable ("down" times, holiday, absence of librarian) to students and on some days the incidence of "overload" (unable to obtain an entry port into the host computer) prevented or discouraged use.

Analyses of data, displayed graphically in the figures on the following pages, reveal conditions, but not necessarily their causes or cures. Some assumptions and speculations are offered in the hope that those who wish to promote use of the system will find such informed guesses to be of value in trying to improve such conditions.

The student use data have been organized into one minor and two major groups:

Figure 1 shows when the system was not accessible;
Figures 2-5 display use data for the whole period;
Figures 6-10 display data on the use of the various system data bases week-by-week and by users' grades (9-13)

NOTE: limited use occurred mainly in weeks 1, 3 and 13 and during week 8 the system was largely inaccessible.

Detail

"Figure 1: Overloads of data bases by hour" reflects what was found in the early weeks of usage. Accessing the system is most difficult in the lunch periods (in the 12 noon to 1:30 p.m. time frame), in mid-morning and before school. Perhaps more ports to the system were opened or possibly students just shifted to off-peak hours. In any event, by mid-term accessing the system ceased to be a significant problem.

Figures 2 and 3 show system use by grade and use of the various data bases by sex, respectively. Figure 2, use by grade, does not reveal

FIGURE 1: OVERLOADS OF DATA BASES BY HOUR

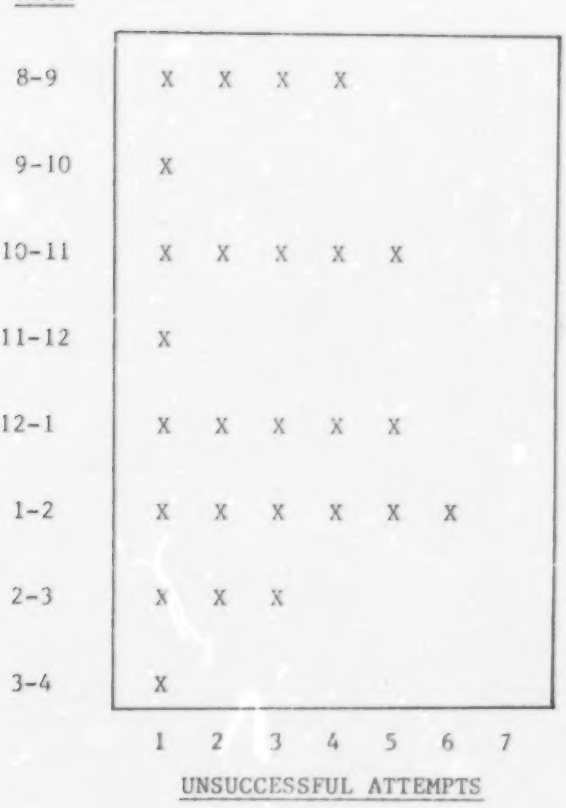


FIGURE 2: USE OF DATA BASES BY GRADES

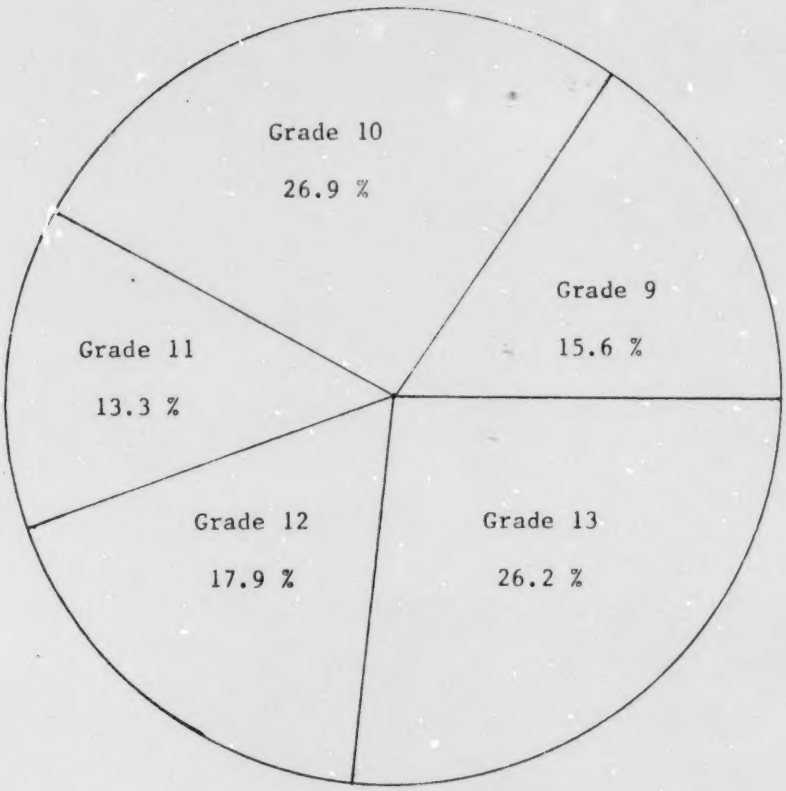
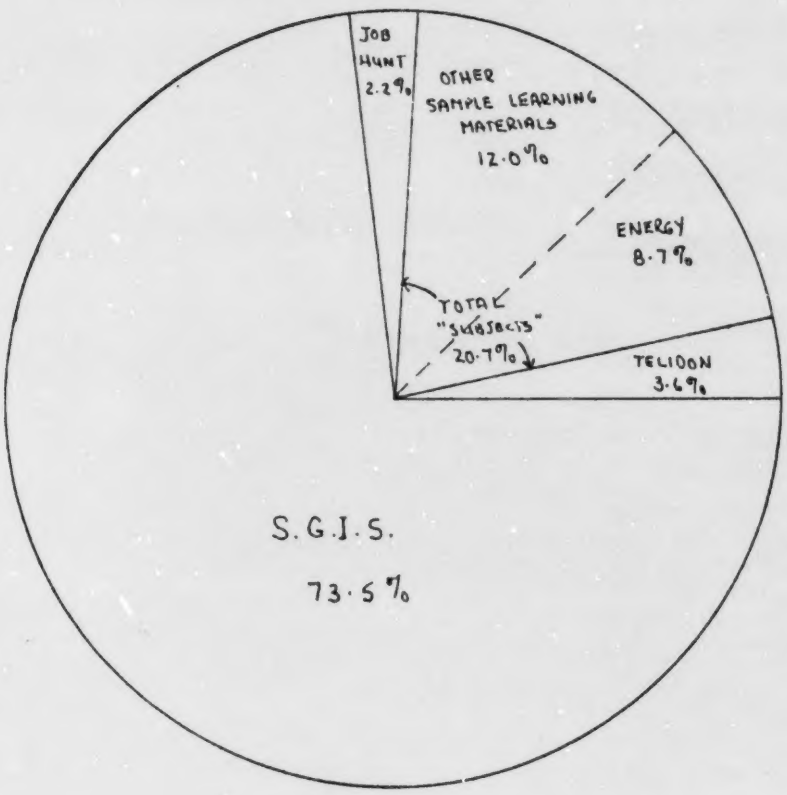


FIGURE 3: USE OF DATA BASES AS PERCENTAGES OF TOTAL USE



much by itself, but combined with by-week and by-data bases information, does suggest why grade 13 students became relatively heavy users toward the pre-Christmas weeks (of this, more below). Many grade 10 students used the "Energy" package in a specific period (week 6), but use of "Energy" and other subject packages was less substantial thereafter (see Figure 6).

Figures 4 and 5 provide usage by sex data. The first graphic clearly shows (a) that the SGIS is the only data base used substantially (over 70% of all "successful" attempts) and (b) that use of the system is used predominantly by male students.

In fact, males used Telidon in an overall ratio of 3.5:1 compared to female students. The difference was less marked in grades 9 and 10 where the ratio was about 2:1. In grades 11-13 the ratio jumped to approximately 6.5:1 in favour of the boys.

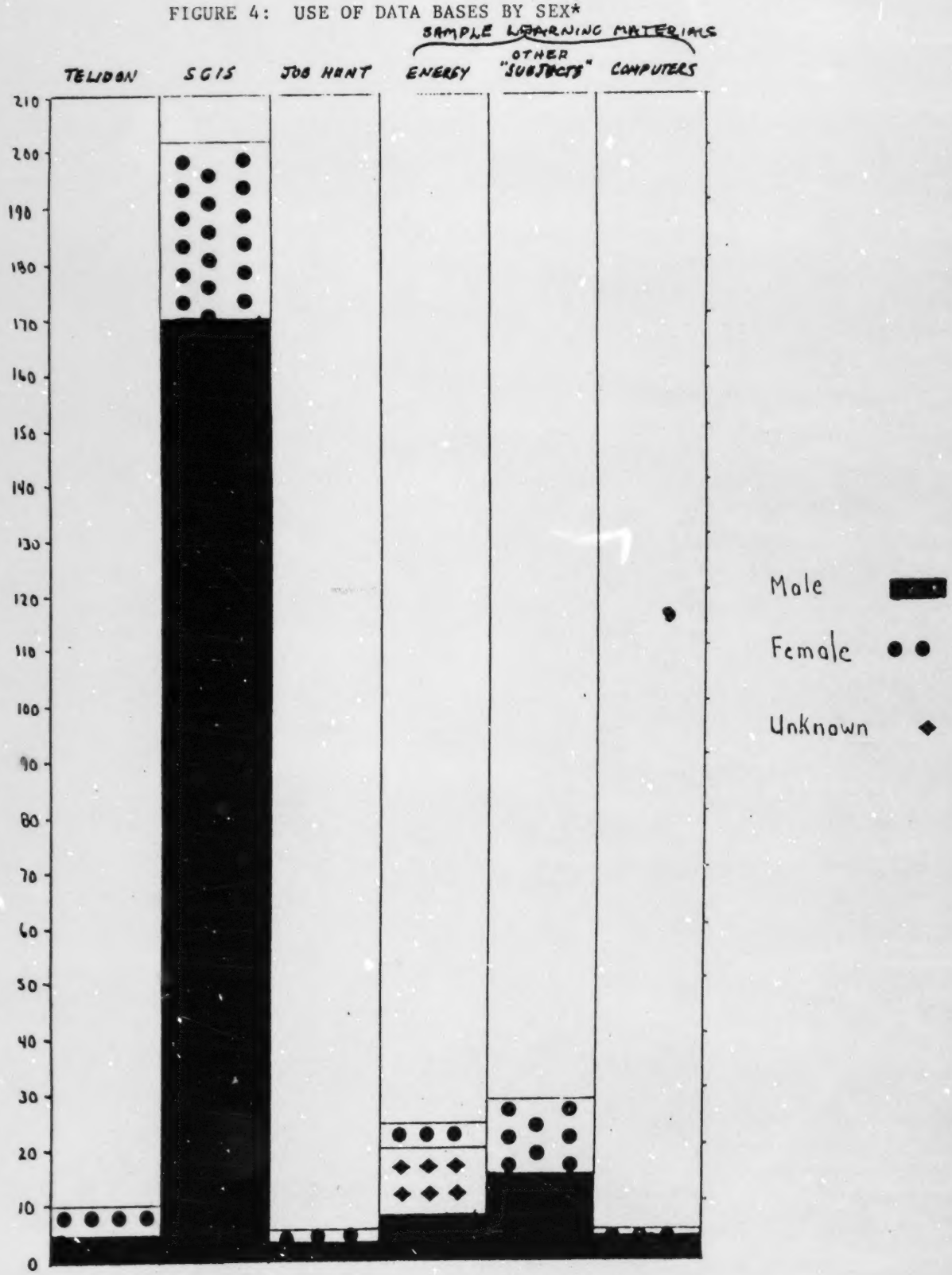
Except for the use of the data base that describes Telidon (only 10 cases, i.e., only 10 students reported searching only that data base), girls' use nowhere equalled boys. Male students made substantially more (successful) attempts at all other data bases.

Figures 6 through 10 try to communicate about the week-by-week use, either by data base or users' grades (9-13).

Figure 6 shows the general trend to greater use as time passes (except for the "Youth and Employment" -- or "job hunt" -- data base). We can clearly see that, after the system was virtually unusable in week 8, usage was slow to spring back to previous levels and, in fact, only SGIS fully regained its previous utilization levels. The use of the descriptive program on Telidon virtually ceased after week 3.

Figure 7 shows by-grade use. Our assumptions were that: (a) use by grade 9 students would be initially low during their orientation period and would not grow sustantially as there is little on the system for them; (b) that use by more senior students would be initially low because they were exposed to the system the previous Spring, probably had experience with the off-line SGIS system, but might grow through the year as they gave more thought to post-secondary careers; (c) that grade 10 students would show ever-increasing interest in and use of the system, were already oriented to the school, and would show greater interest in guidance information asthey matured. While these pattern were generally what was observed to happen, grade 10 interest "peaked" early and then fell back (the

FIGURE 4: USE OF DATA BASES BY SEX*



* Data are for the period September 22 to December 2 only.

FIGURE 5: USE OF DATA BASES BY SEX,
EXPRESSED AS PERCENTAGES

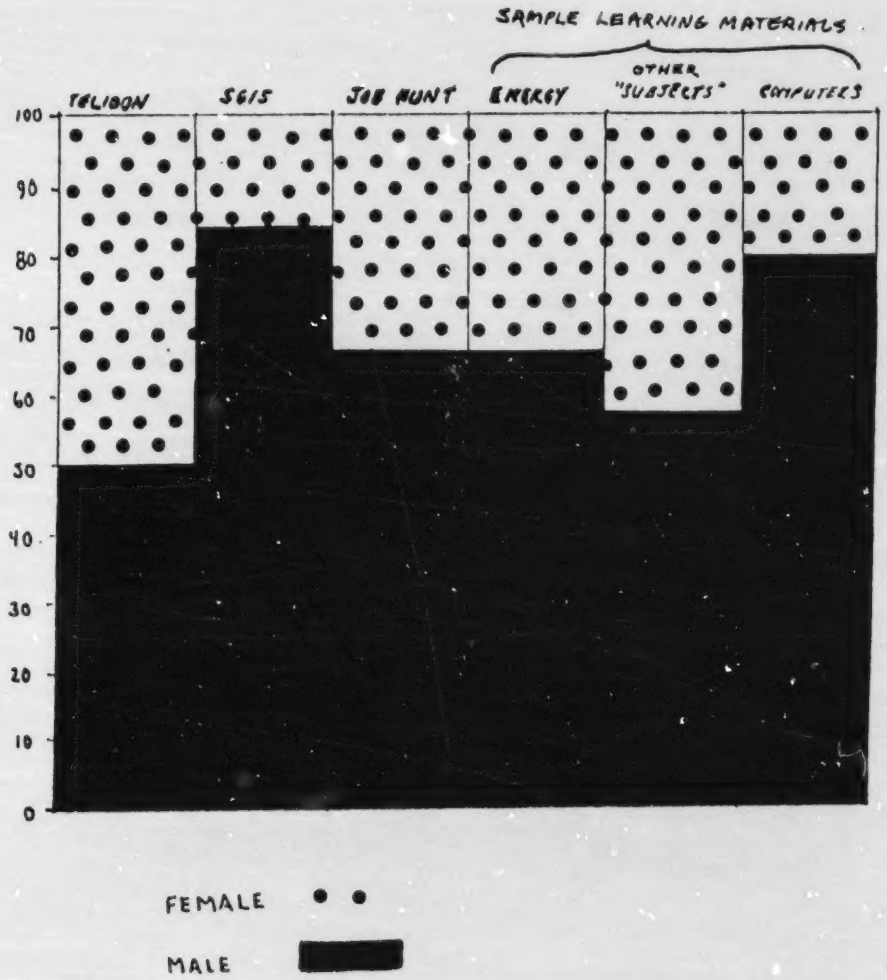


FIGURE 6: DATA BASES, USE BY WEEK

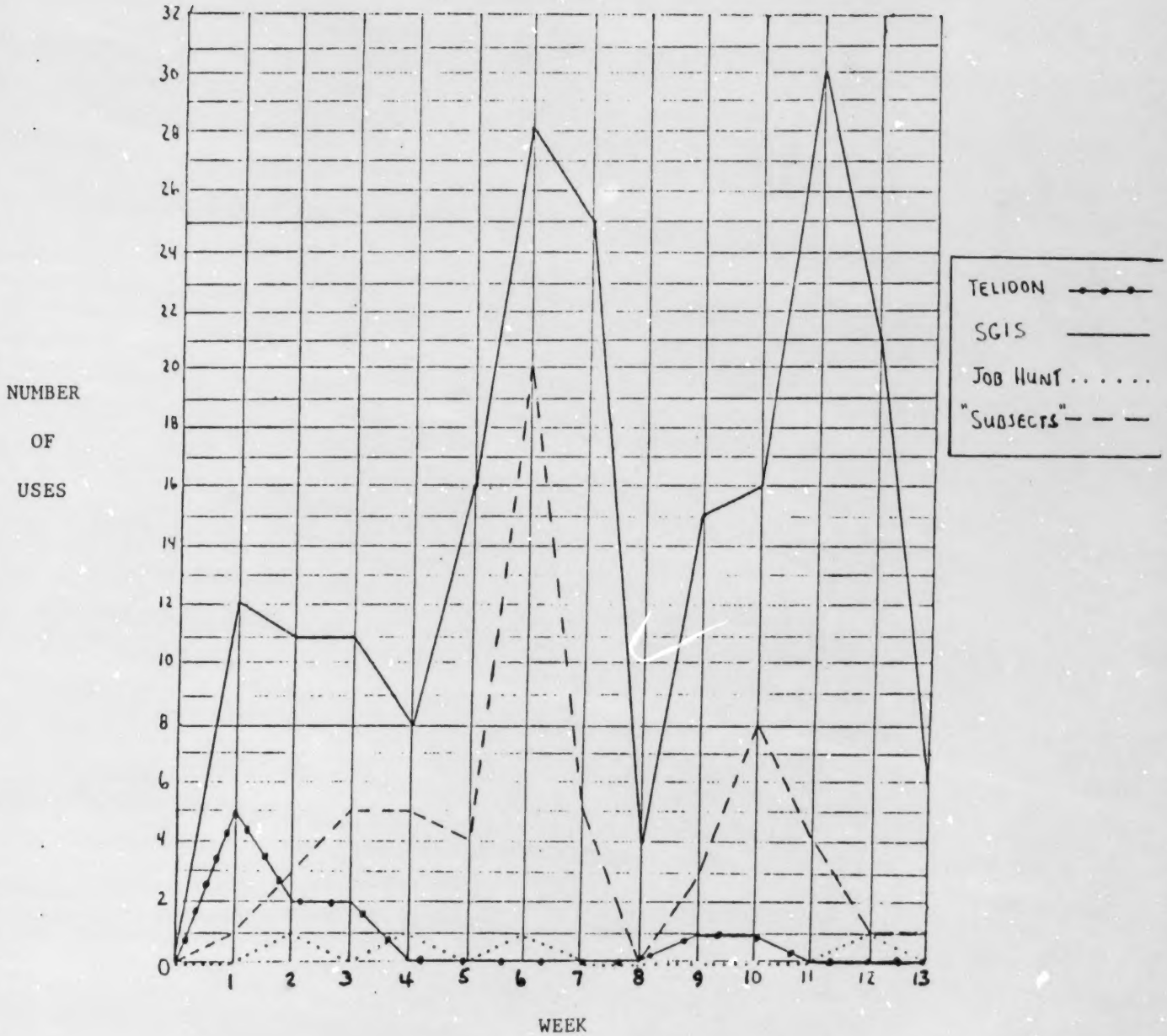
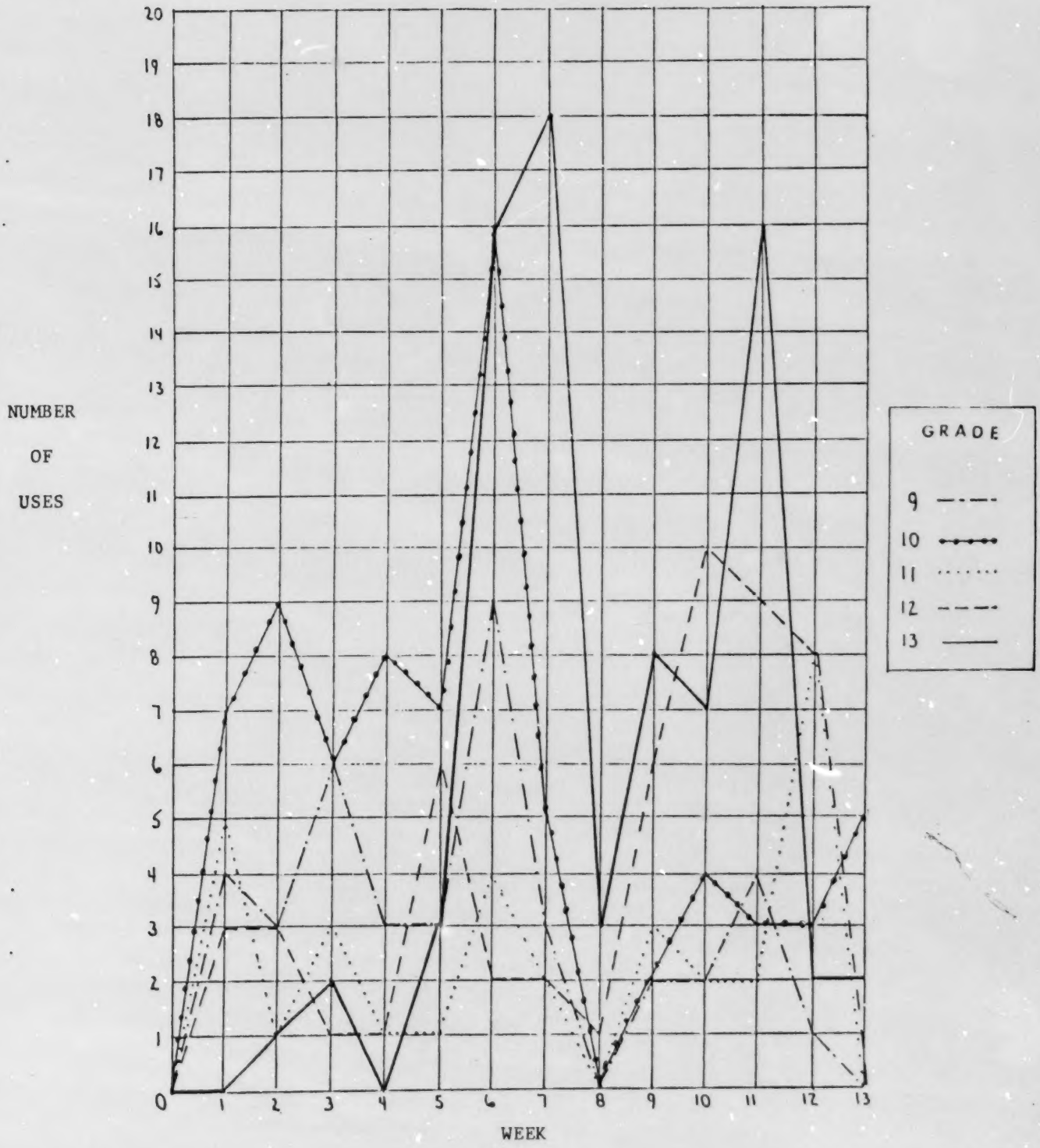


FIGURE 7: USE, BY GRADE



"week 8 collapse") and recovered slowly. Grade 13 interests shot up after mid October and use was often of considerable duration, but use by grade 11 students was slight throughout. Grade 9 use was initially higher than expected, but fell off dramatically after week 8.

Figure 8 shows that reports of the use of the data base describing Telidon almost ceased after week 3. However, it is possible, even likely, that this information was scanned by users (as a "refresher"?) before proceeding to others.

Figure 9 essentially reflects low use of the "Sample Learning Materials", or "subjects" as they are more commonly called. Except for an initial interest in "Computers" and for a burst of interest in the "Energy" unit by grade 10 students in week 6, there was little real interest evident for these data bases. Use of the Energy unit was in support of a science study unit proceeding at that time.

Figure 10 is very "busy", but one quickly notes that it was in substantial demand for SGIS from weeks 6 through 12. In week 8, when there were only two uses (involving four students), both were to access SGIS, for a total of 80 minutes. Grade 12 as well as grade 13 students made much use of this base in the latter half of this study period, but grade 11 usage was low throughout, save week 12. Nearness to semester end (and graduation or school-leaving) and the imminent need to make application for admission to post-secondary institutions probably account for the spurt in interest in November.

FIGURE 8: USE OF DATA BASE "TELIDON"

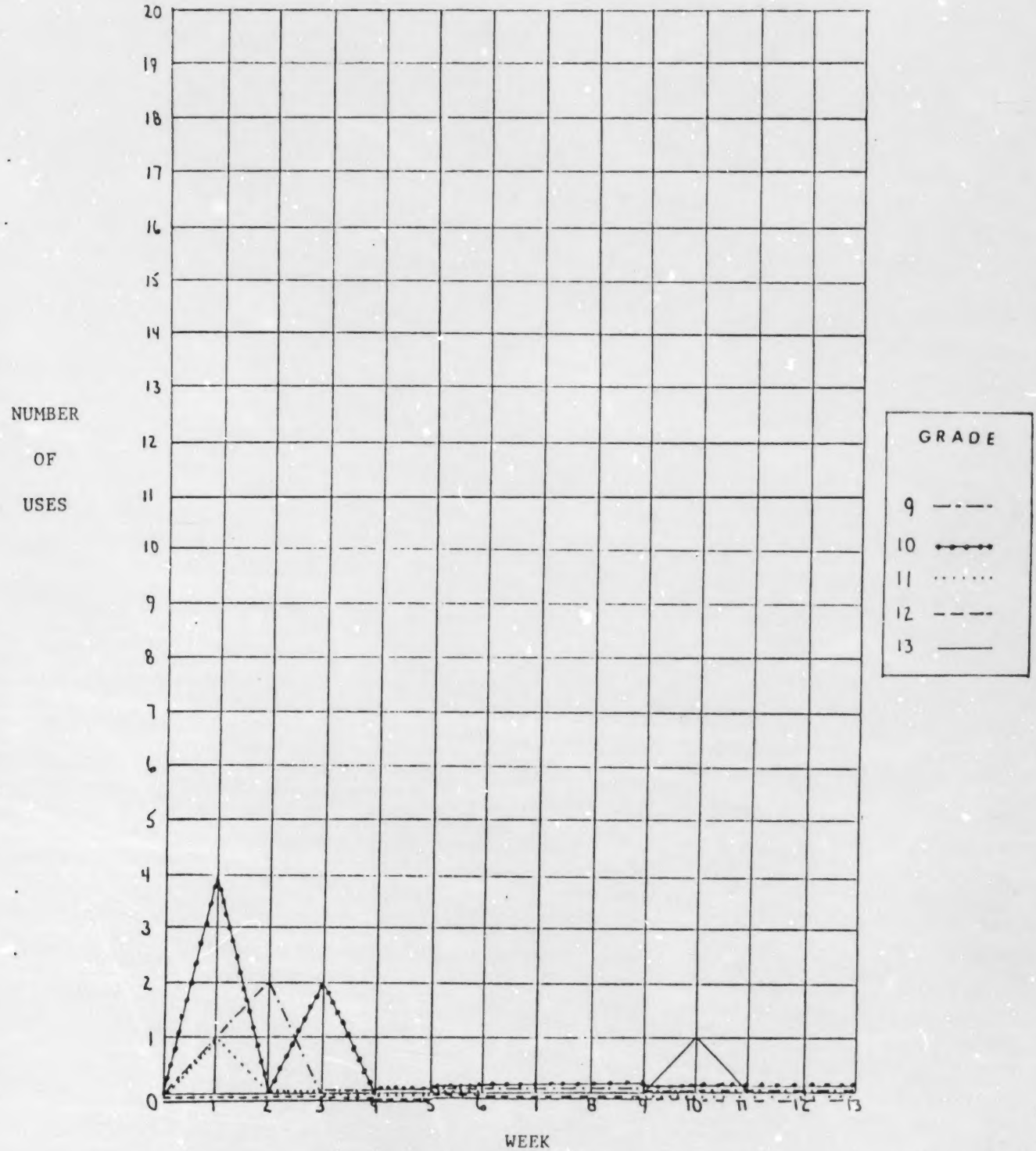


FIGURE 9: USE OF THE "SUBJECTS" DATA BASE
(INCLUDING ENERGY AND COMPUTERS)

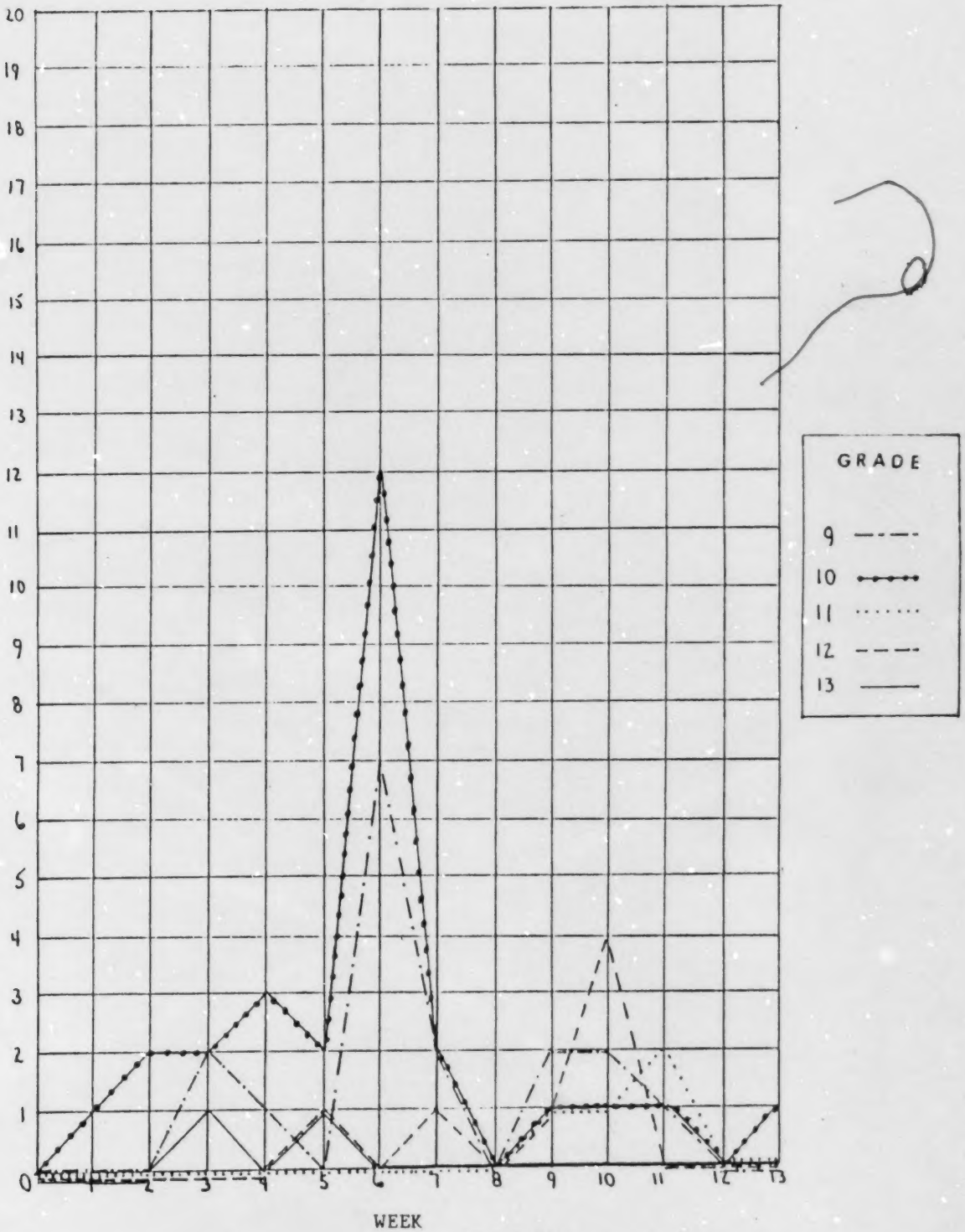


FIGURE 10: USE OF SGIS DATA BASE, BY GRADES